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MATHEMATICS 13

STUDENT MATERIALS

CLASSROOM ASSESSMENT MATERIALS

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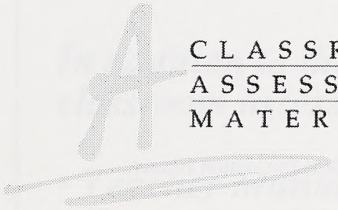

CLASSROOM
ASSESSMENT
MATERIALS

Alberta
EDUCATION

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Mathematics 13

This package of Student Materials contains

- *End-of-Course Exam*
- *Performance Assessment*
- *Project*

In addition to the Student Materials, this classroom assessment package includes

- *Teacher Manual*
- *Examples of Students' Responses*

CLASSROOM ASSESSMENT MATERIALS

Mathematics 13

End-of-Course Exam

End-of-Course Exam

Description

Time allotted: 90 minutes (an additional 30 minutes may be used)
Total possible marks: 45
This is a **closed-book** exam consisting of **two** parts:

Part A
has 28 selected-response questions and 7 numerical-response questions, each with a value of one mark.

Part B
has 2 written-response questions, each with a value of 5 marks.

A formula sheet is included at the back of this booklet.

Instructions

- Fill in the information required on the answer sheet and the exam booklet as directed by the teacher.
- You are expected to provide your own scientific calculator.
- Carefully read the instructions for each part before proceeding.
- All your work is to be done in the exam booklet.

Part A: Selected Response and Numerical Response

35 Questions (28 Selected Response and 7 Numerical Response)

- **Use an HB pencil only** for a machine-scored answer sheet.
- If you wish to change an answer, erase **all** traces of your first answer.
- Read each question carefully. Consider all numbers used to be exact.

Instructions for Selected-Response Questions

- Decide which of the choices **best** completes the statement or answers the question.
- Locate that question number on the separate answer sheet provided and fill in the circle that corresponds to your choice.

Example

This end-of-course exam is for the subject of

A. biology
B. physics
C. chemistry
D. mathematics

Answer Sheet

Ⓐ Ⓑ Ⓒ ●

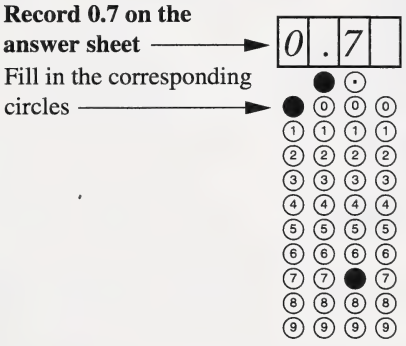
Instructions for Numerical-Response Questions

- Record your answer on the answer sheet provided by writing it in the boxes and then filling in the corresponding circles.
- **Enter the first digit of your answer in the left-hand box and leave any unused boxes blank.**

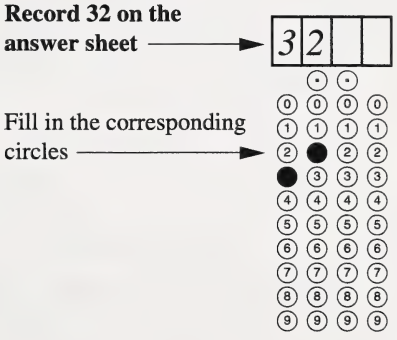
Sample Questions and Solutions for Numerical Response

Find the value of $\sqrt{0.49}$

Value: 0.7
Value to be recorded: 0.7



Evaluate $(5)^2 + 7$
Value: 32
Value to be recorded: 32

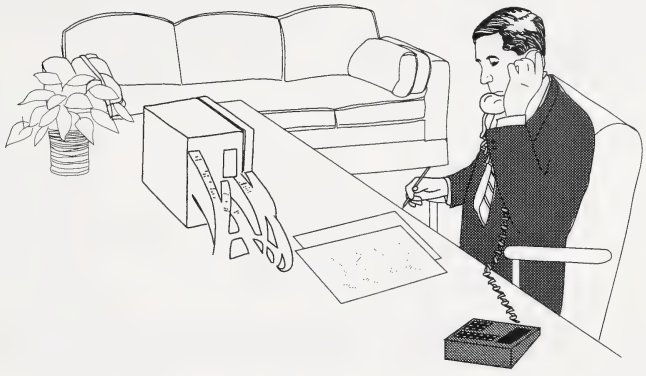


These questions can be answered on an answer sheet provided by your teacher.

Do not turn the page to start the exam until told to do so by the teacher.

Consumerism

Don is a stockbroker and regularly uses mathematical understandings he acquired in high school to evaluate, investigate, analyze, and predict. The following eleven questions are related to such usages.



In order to calculate stock prices, Don needs to evaluate arithmetic expressions using the order of operations.

1. An equivalent value for $5\frac{3}{4} \times 8.1 + 20 \div 5$ is

A. 13.315 **B.** 32.315

C. 50.575 **D.** 69.575

2. Four equally priced stocks dropped in value by 25%, $\frac{1}{3}$, $\frac{2}{7}$, and 0.20 of their price per share respectively. The largest drop in stock price is

A. $\frac{1}{3}$ **B.** 25%

C. $\frac{2}{7}$ **D.** 0.20

Use the following information to answer the next question.

During the first three days of a week, a stock's price on the New York Stock Exchange was listed as $\$3\frac{3}{8}$, $\$5\frac{1}{4}$, $\$7\frac{1}{8}$. Don noticed that there was a common difference between successive prices.

3. The common difference between each day's stock price above is

A. $\$1\frac{1}{8}$

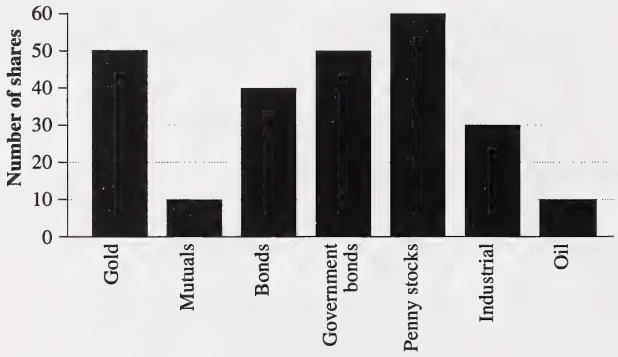
B. $\$1\frac{7}{8}$

C. $\$2\frac{1}{8}$

D. $\$2\frac{7}{8}$

Use the following information to answer the next question.

Don examined a customer's portfolio. He drew a bar graph showing the number of shares of each type of stock, as illustrated below.



Numerical Response

1. The mean number of shares in per stock type, to the nearest tenth, is _____.

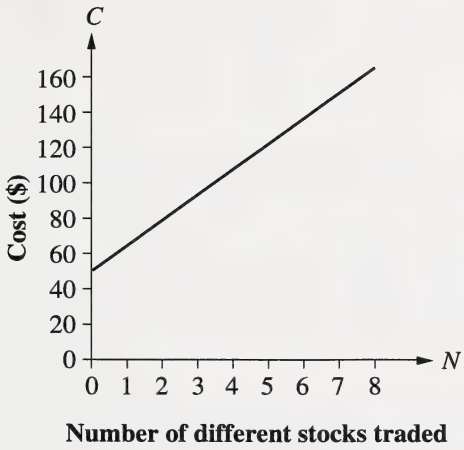
(Round and record your answer on the answer sheet.)

Use the following information to answer the next question.

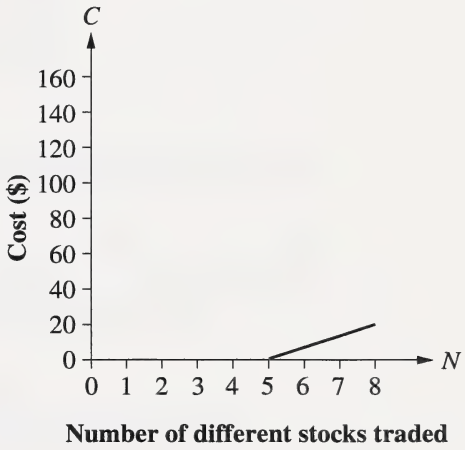
Don's total brokerage fee is given by $C = 50 + 15N$, where C equals the total fee, in dollars, and N represents the number of different stocks traded.

4. The graph that best illustrates the equation is

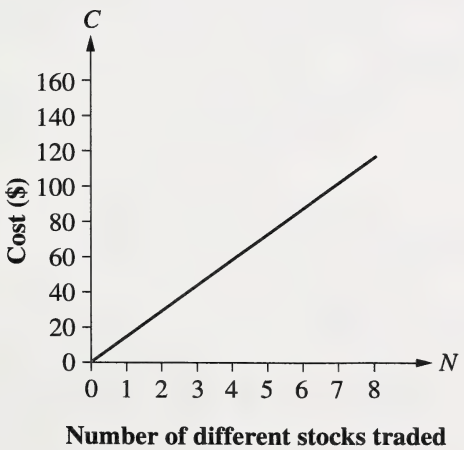
A.



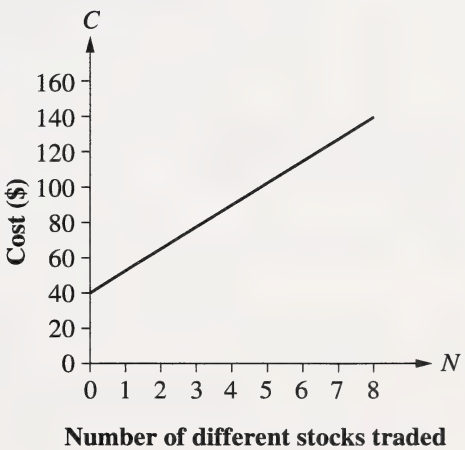
B.



C.



D.



Use the following information to answer the next question.

A shareholder receives a dividend that is a multiple of the number of shares held, as shown in the chart below.

Number of Shares	Dividend Paid
100	$5
200	$10
300	$15
400	$20

5. If a shareholder receives a dividend of $7.50, then the number of shares held is

A. 125 **B.** 150

C. 160 **D.** 175

Use the following information to answer the next question.

Don developed a direct variation model to analyze the cost of upgrading the amount of memory in the company's computer. He found that the cost y varied directly with the amount of memory x and the cost of 8 megabytes of memory was $105. Don used $y = kx$.

Numerical Response

2. In the relationship above, the constant of variation, k, correct to the nearest tenth of a dollar, is $_____ per megabyte.

(Round and record your answer on the answer sheet.)

Use the following information to answer the next question.

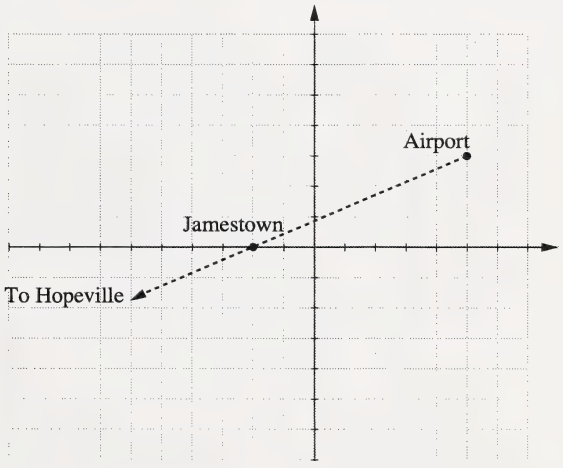
Don's receptionist is paid according to the formula $p = 8.5n$, where p is the total pay, in dollars, and n is the number of hours worked.

6. Which of the following ordered pairs, (n, p), satisfies this formula?

A. (4, 34)
B. (5.5, 45)
C. (25.5, 3)
D. (34, 4)

Use the following information to answer the next question.

Don travelled to Hopeville to visit a client. He flew over Jamestown, which is halfway between the airport and Hopeville. The airport has coordinates (5, 3) and Jamestown has coordinates (–2, 0), as shown on the graph below.



7. According to the graph above the coordinates of Hopeville on the map are

A. (–12, –3)
B. (–3, –10)
C. (–3, –9)
D. (–9, –3)

Use the following information to answer the next question.

In Hopeville, Don drove at a speed of 60 km/h, and frequently used his brakes to come to a stop. The braking distance d in metres in terms of time t in seconds, is given by $d = 17t - 2t^2$.

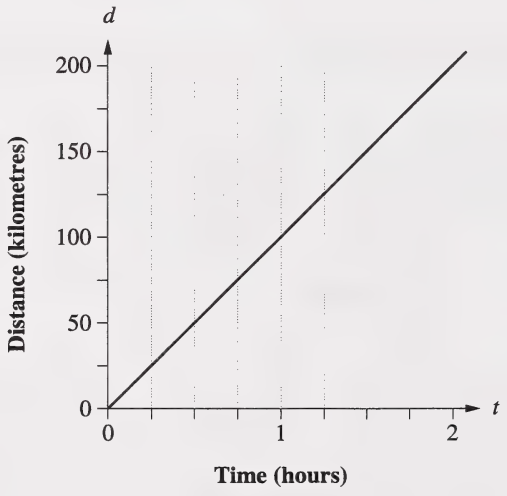
Numerical Response

3. Using the information above, the braking distance, d, travelled by Don's car while applying the brakes over 2 s is _____ m.

(Record your answer on the answer sheet.)

Use the following information to answer the next question.

From Hopeville, Don travelled by car to a client's office. The relationship between the distance Don's car travelled, in kilometres, to the length of time travelled, in hours, is shown by the graph below.



8. If Don's speed is constant, the estimated time to complete the 275 km trip is

A. 4.00 h
B. 3.75 h
C. 3.00 h
D. 2.75 h

Connections

Solving problems may require you to connect skills and understandings you have developed to identify and write equivalent or simpler forms of an expression. Use these skills and understandings to answer the next set of questions.

Connect your ability to work with negative and positive exponents and different forms of polynomial expressions when answering the next seven questions.

9. The product of $(-3x^8)(6x^{-5})$, when simplified with positive exponents, is

A. $-18x^3$

B. $-\frac{18}{x^3}$

C. $18x^3$

D. $\frac{x^3}{18}$

10. The expanded form of $-3x(6x^3 - 3x^2 + 4)$ is

A. $-18x^3 + 6x^2 - 12x$

B. $-18x^4 - 6x^3 + 12x$

C. $-18x^3 - 9x^2 + 12x$

D. $-18x^4 + 9x^3 - 12x$

Numerical Response

4. The number of terms in the simplified form of $(3x^2 - 2x) - (7x^2 - 2x - 3)$ is _____.

(Record your answer on the answer sheet.)

11. The simplified form of $\frac{8x^3 - 4x^2 + 12x}{2x}$, when $x \neq 0$, is

A. $4x^2 - 2x$

B. $4x^2 + 6x$

C. $4x^2 - 2x + 6$

D. $4x^2 - 4x^2 + 6x$

12. The product of $(x - 3)(x + 4)$ is

A. $x^2 - x - 12$

B. $x^2 + x - 12$

C. $x^2 + 7x - 12$

D. $x^2 - 12$

13. The greatest common factor of $16x^4 + 4x^2 - 8x$ is

A. $2x$

B. $2x^2$

C. $4x$

D. $4x^2$

14. The factored form of $x^2 - 16$ is

A. $(x - 8)^2$

B. $(x - 4)^2$

C. $(x - 8)(x + 8)$

D. $(x + 4)(x - 4)$

Connect your understanding of conditions under which triangles are congruent in answering the next two questions.

15. Two similar triangles are congruent when

A. one of the angles in each triangle is a right angle

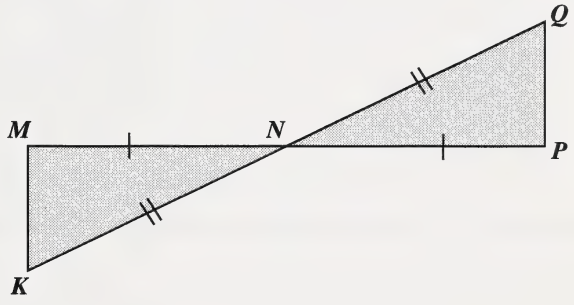
B. a pair of corresponding sides are equal

C. the sum of the sides are not equal

D. the sum of the angles is 90°

Use the following information to answer the next question.

Lines MP and KQ intersect at point N in the diagram below.



16. The triangles $\text{Æ}QPN$ and $\text{Æ}KMN$, are congruent by

A. SAS

B. SSS

C. ASA

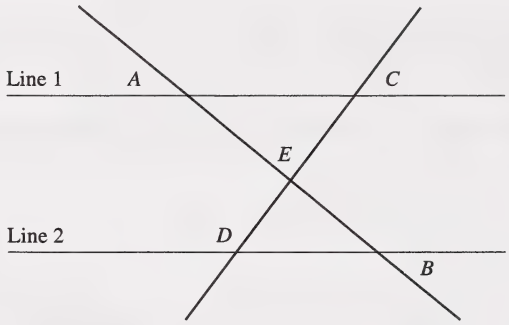
D. SSA

Connections

Mathematics 13 students present projects that involve connecting their mathematical understanding to designs, constructions, and data analyses. The following questions are related to these connections.

Use the following information to answer the next question.

Petra connected her knowledge of parallel lines intersected by transversals to determine lines and angles in a construction design project. The walls are represented by Line 1 and Line 2 in the diagram below.



Note: Line 1 is parallel to Line 2.

Letters A, B, C, D, and E represent the angles, not the intersection points.

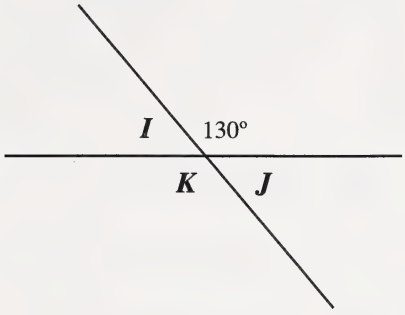
17. If Petra knew the measure of $\angle A$ in the diagram above, another angle she could determine without using a protractor is

A. $\angle E$ **B.** $\angle D$

C. $\angle C$ **D.** $\angle B$

Use the following information to answer the next question.

Petra determined the angles between intersecting walls, as formed by the lines in the diagram below.



Letters K, I, and J represent the angles, not the intersection points.

18. In the diagram, the measures of $\angle I$ and $\angle J$ are

A. $\angle I = 90°,\ \angle J = 90°$

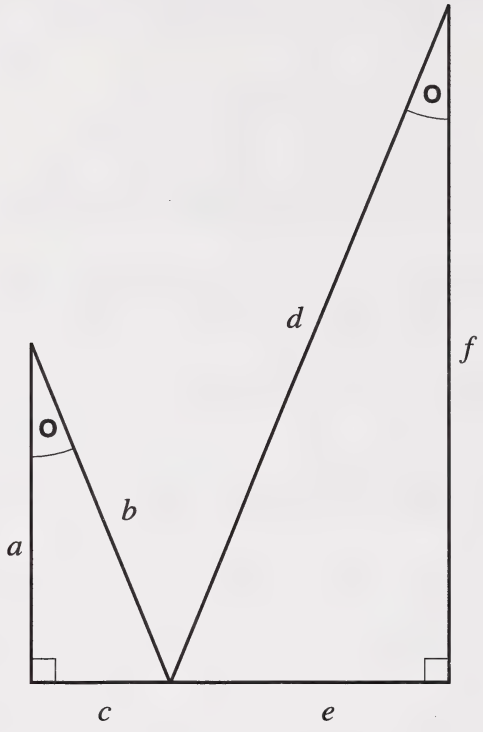
B. $\angle I = 30°,\ \angle J = 100°$

C. $\angle I = 50°,\ \angle J = 50°$

D. $\angle I = 100°,\ \angle J = 50°$

Use the following information to answer the next question.

Petra solved a design problem involving the two similar triangles shown below.



19. The proportion that could be used to solve for the missing side, f, in the diagram above is

A. $\frac{c}{b} = \frac{e}{f}$

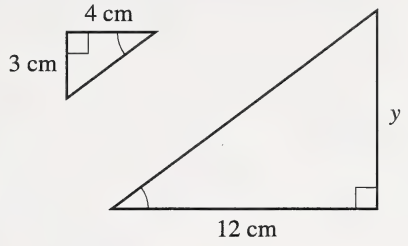
B. $\frac{c}{a} = \frac{e}{f}$

C. $\frac{a}{c} = \frac{d}{f}$

D. $\frac{a}{f} = \frac{d}{b}$

Use the following information to answer the next question.

For her project, Mary used ratios and the two similar triangles pictured below to expand shapes.



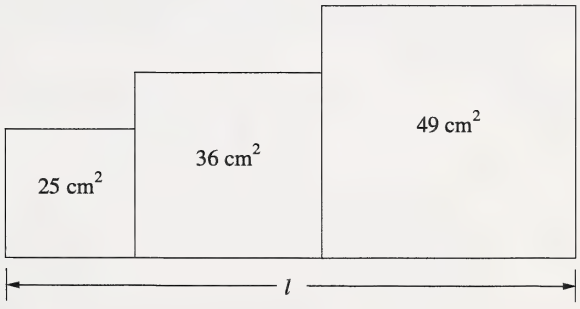
Numerical Response

5. The length of side y is _____ cm.

(Record your answer on the answer sheet.)

Use the following information to answer the next question.

Mary also expanded a square with an area of $25\ cm^2$, so that the areas of the similar figures increased to $36\ cm^2$ and $49\ cm^2$, as shown below.



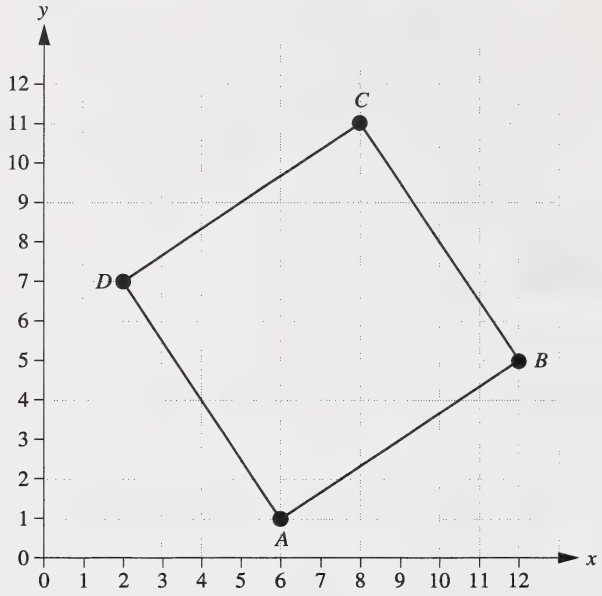
Numerical Response

6. The total length, l, is _____ cm.

(Record your answer on the answer sheet.)

Use the following information to answer the next question.

Bart connected his understanding of finding distances on a coordinate plane to determining the length of the side of a window. Bart drew lines to represent the sides of a window, as shown on the coordinate plane below.



20. The length of side $\overline{AB}$ is

A. 11.05 units

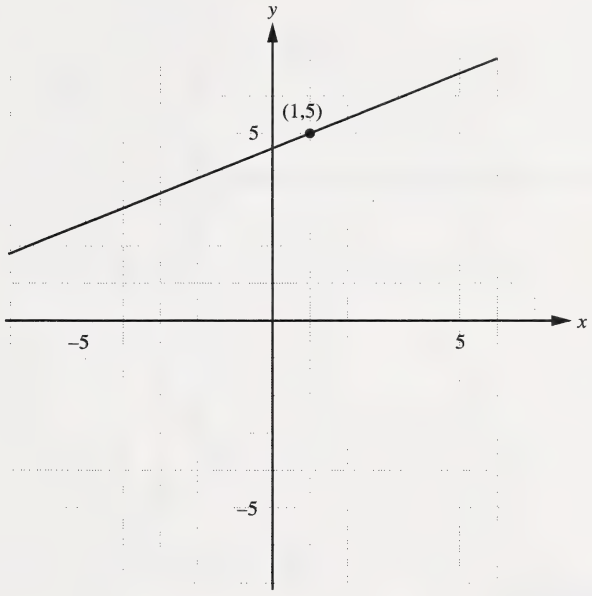
B. 10.00 units

C. 7.21 units

D. 6.00 units

Use the following information to answer the next question.

Bart used coordinate geometry to design a roof for a house. He drew a line passing through the point (1, 5), as shown on the coordinate plane below.



21. If the line also passes through the point whose coordinates are $(-4, 3)$, then the slope of the line is

A. $\frac{2}{5}$

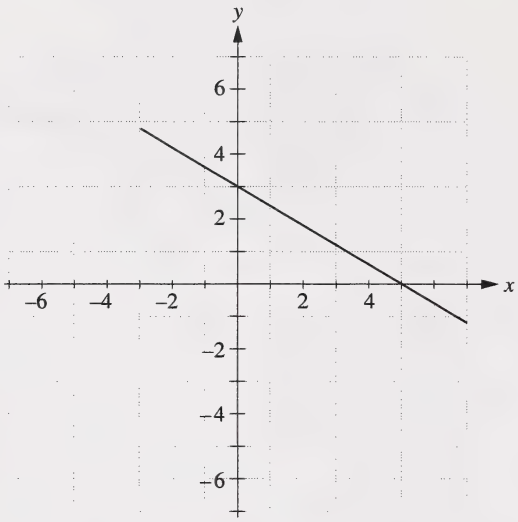
B. $\frac{5}{2}$

C. $-\frac{2}{5}$

D. $-\frac{5}{2}$

Use the following information to answer the next question.

Bart also analyzed a different roof, by using the line segment displayed on this coordinate plane.



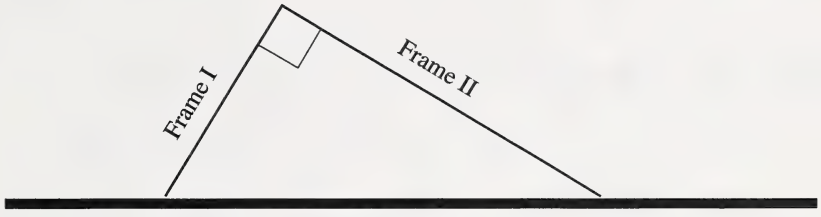
Numerical Response

7. The x-intercept of the line, to the nearest whole number, is _____.

(Record your answer on the answer sheet.)

Use the following information to answer the next question.

Bart designed the roof, as shown in the diagram below. Frame I leans against Frame II so that the frames are at right angles.



22. If Frame I has a slope of $\frac{5}{3}$, then the slope of Frame II is

A. $-\frac{5}{3}$

B. $\frac{3}{5}$

C. $\frac{5}{3}$

D. $-\frac{3}{5}$

Use the following information to answer the next question.

John's project involved the analysis of several energy sources. John determined a radio galaxy emits about 1×10^{55} joules of energy while a lightning flash emits about 1×10^{10} joules of energy.

23. The ratio of radio galaxy energy to lightning flash energy is about

A. $1 : 10^{65}$

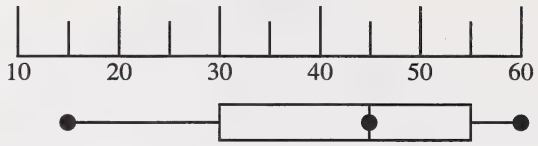
B. $10^{65} : 1$

C. $10^{45} : 1$

D. $1 : 10^{45}$

Use the following information to answer the next two questions.

For his project, Tom collected data on the speeds of cars, in km/h, passing through an intersection near a high school, and represented it in a 50% box plot, as shown below.



24. According to the box plot above, one could claim that 50% of the speeds of the cars passing through the intersection near the school are below

A. 30 km/h
B. 40 km/h
C. 45 km/h
D. 55 km/h

25. The statistical measure associated with 45 in the box plot above is the

A. range
B. median
C. mode
D. mean

Use the following information to answer the next three questions.

Francine did a random survey to find the length of time, in minutes, it took students to study for a Mathematics test. Her raw data are organized into the stem-and-leaf plot shown below.

Raw Data

65	60	75	78
84	98	51	73
78	56	77	80

Completed Stem-and-Leaf Plot

5	1	6				
6	0	5				
7	3	5	7	8	8	
8	0	4				
9	8					

26. According to the data above, the **median** time spent by students studying for the Mathematics test is

A. 77 minutes
B. 76 minutes
C. 75 minutes
D. 73 minutes

27. Which one of the following statements is **true** about stem-and-leaf plots?

A. Clusters and gaps in the stem are not readily visible.
B. Two sets of data cannot be represented on a single plot.
C. The leaves usually represent the last digits in a data set.
D. Most pieces of data are displayed using the leaves only.

28. When conducting a survey, it is important to eliminate the

A. bias
B. randomness
C. appropriateness
C. amount of data

You have now completed Part A. Proceed directly to Part B.

Part B: Written Response

2 Questions

Instructions

- Consider all numbers used in each question to be **exact.**
- Read each question carefully.
- Write your answers in the exam booklet as neatly as possible.
- For full marks, your answers **must show all** pertinent explanations, calculations, and formulas.
- Your answers **should be** presented in a well-organized and appropriate manner.

Use the following information to answer the next question.

Bart is planning to refinish a wall, by either wallpapering or texture- painting it. The wall measures 4.9 m by 2.3 m, and will be covered completely.

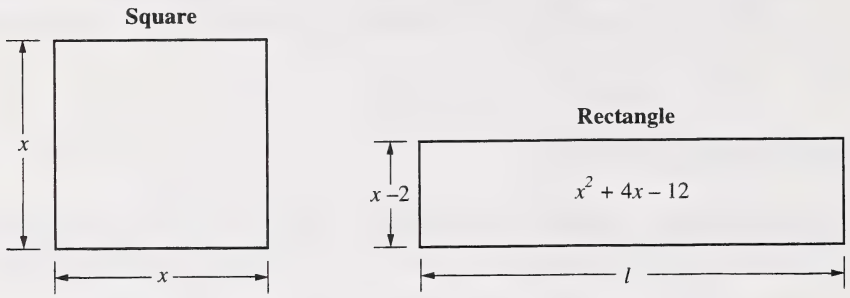
A roll of wallpaper costs $15.85 and covers an area of 2.5 m^2. Texture paint is sold in a 4 L container, which covers 4.2 m^2 and costs $23.50. Assume that the wallpaper comes in **full** rolls only, and that texture paint can be bought only in **full** 4 L containers.

Written Response – 5 marks

1. What is the most economical way for Bart to refinish the wall? Support your answer with calculations showing the actual cost of refinishing the wall both ways.

Use the following information to answer the next question.

Kelly's project requires her to change the design of a label, from a square whose side is x centimetres, to a rectangle with a shortened width of $(x - 2)$ cm and area of $(x^2 + 4x - 12)$ cm^2, as shown below.



Written Response – 5 marks

2. **a.** Kelly takes the first steps to find the length, l, of the rectangle in terms of x centimetres, by factoring the area of the rectangle. Complete her work and state the length.

$$\begin{aligned} \text{Area} &= lw \\ A &= x^2 + 4x - 12 \\ A &= (\quad\quad)(x - 2) \end{aligned}$$

b. Kelly compares the length of the rectangle to the side of the square. State the difference between the length of the rectangle and the length of a side of the square.

c. Kelly is told that the **areas** of the two labels have to be equal. She correctly determines that this will occur when $x = 3$. Explain why her reasoning is correct, and demonstrate that the areas would be different for other values of x.

You have now completed the End-of-Course Exam.
If you have time, you may wish to check your answers.

Mathematics 13 Formula Sheet

The following information may be useful in writing this test:

Coordinate Geometry

Given the line segment joining the two points (x_1, y_1) and (x_2, y_2),

- Slope $m = \dfrac{y_2 - y_1}{x_2 - x_1}$, where $x_1 _ x_2$
- Midpoint $M = \left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$
- Distance $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

The equation of a line where m is the slope and b is the y-intercept is

- $y = mx + b$

Relations (Variation)

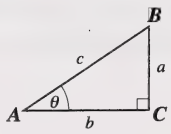
- $y = kx$
- $y = \dfrac{k}{x}$
- $y = kx + c$

Geometry

Area	Perimeter
• $A = \pi r^2$	• $C = 2\pi r$
• $A = s^2$	• $P = 4s$
• $A = lw$	• $P = 2(l + w)$
• $A = \dfrac{bh}{2}$	• $\pi \cong 3.15$ values from π key on a scientific calculator
• $A = \dfrac{h(a + b)}{2}$	
• $A = bh$	

Pythagorean Theorem

In a right triangle labelled ABC, with sides a, b, c as shown



- $c^2 = a^2 + b^2$

Performance Assessment

- *Task 1: Toothpick Triangle Patterns*
- *Task 2: Volleyball Follies*
- *Task 3: The Big Swallow*

Performance Assessment

Description

Time allotted: 90 minutes (an additional 30 minutes may be used)
Total possible marks: 18

This is a **closed-book** test consisting of **three** tasks:

Task 1 requires you to connect two variables, and to use graphs to discover a pattern.

Task 2 requires you to draw an inference by organizing, presenting, and analyzing the data supplied.

Task 3 requires you to use operations and equivalent forms of rational numbers to solve a direct variation problem.

You are advised not to spend more than 30 to 40 minutes on any one task.

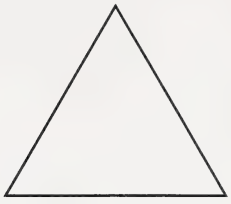
Your teacher will have explained the scoring criteria to you. Remember that you will be marked for mathematical concepts, the quality of your answers, and the quality of your communication skills.

Instructions

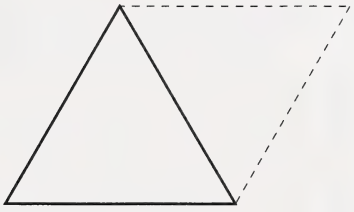
- Fill in your name on the exam booklet as directed by the teacher.
- You are expected to provide your own calculator, pencil, drawing instruments, and ruler. Other manipulatives will be provided by the teacher and must be returned when you are finished.
- Carefully read the instructions for each task before proceeding.

Task 1: Toothpick Triangle Patterns

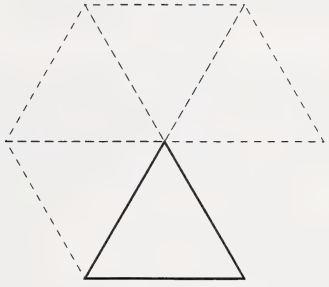
An equilateral triangle can be formed, using 3 toothpicks.



One triangle is shown below, which requires 3 toothpicks to build. Additional equilateral triangles can be formed by adding more toothpicks to the original triangle, as shown.



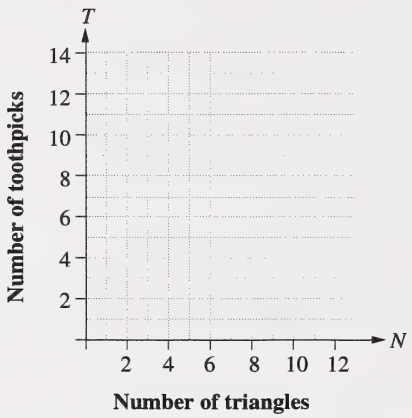
Note: Do not form a pattern of triangles that represents a closed figure (with interim angles less than 180°), such as shown below.



A. Using your toothpicks, continue this construction to complete the chart below.

Number of Congruent Equilateral Triangles	1	2	3	4	5	6
Number of Toothpicks Required	3					

B. i. Represent the information contained in your table in graph form, using the grid below.



ii. Explain why a mathematician, who was given this problem, said that "the graph of this relation should not be a solid line, but, rather, specific points."

C. From either the table or the graph, determine the slope and y-intercept of this linear relation.

D. i. Find the equation that represents this linear relation and use it to determine the number of toothpicks required to make 10 triangles.

ii. Following this linear relation, how many triangles could you make from a box of 500 toothpicks? How many toothpicks would be left over?

Task 2: Volleyball Follies

As team manager for your school's volleyball team, you are scouting opposing teams and collecting statistics on their players. You decide to compare heights of the players of two other teams. The heights (in cm) of the players for these teams are given in the tables below.

Springboks Player Heights (cm)
160
160
160
160
160
185
185
190
200
200

Antelopes Player Heights (cm)
160
160
160
165
180
185
185
185
190
190

A. Organize this data in a back-to-back stem-and-leaf plot, which has been started below.

Springboks		Antelopes
0	16	0
	17	
	18	
	19	
	20	

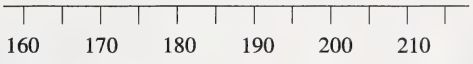
Note: The height of the first Springbok and the first Antelope have already been entered.

B. Calculate the mean, median, mode, and range of both sets of data.

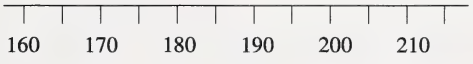
Springboks	Antelopes
Mean	Mean
Median	Median
Mode	Mode
Range	Range

C. Organize the two sets of data into a 50% box-and-whisker plot below.

Springboks



Antelopes



D. As manager, you are to report your scouting results to the coach. Based on your analysis, which of the two teams has the height advantage? Support your conclusion in paragraph form, using all calculated measures of central tendency and dispersion.

Task 3: The Big Swallow

You are the manager of a local convenience store. One of the items that you sell is a flavoured ice drink called "**The Big Swallow**."

The Big Swallow
80 cents
Regular Price

Your **cost** for the drink and cups is always 30¢ per serving.

The difference between your **cost** and your **selling price** is your **profit**.

A. You normally sell the Big Swallow for 80¢.

i. Calculate the profit you make per serving.

ii. Calculate your total profit if you sell 500 servings in one week.

B. To increase your profits, you decide to experiment with different types of discounts.

The Big Swallow
10% off
This Week Only

i. During one week, you decide to try a 10% discount off the regular price.

a. Calculate your new selling price and profit per serving.

b. If you sold 620 servings in this week, calculate the total amount of your profit.

ii. During another week, you try a coupon special, where each drink costs 10¢ less with a coupon.

a. Calculate your new selling price and profit per serving.

b. If you sold 650 servings in this week, what would the total amount of your profit be? Show your calculations.

iii. For a third week, you try a reward system, where frequent customers get a fourth drink free if they purchase three at the regular price within the same week.

Under this plan, you sell 800 servings, which includes 200 free fourth drinks. How much profit do you make?

C. Which of the three plans was the best from the point of view of making a profit?

D. Which of the three plans was the best from the point of view of purchasers

- if they bought a single serving in a week?

- if they bought four servings in a week?

E. If you wanted to continue with the Frequent Swallower plan, what is the minimum number of servings that you would have to sell in order to make $260 profit?

Explain and **use** a procedure to find this result.

You have now completed the Performance Assessment.
If you have time, you may wish to check your answers.

Project

• *Statistical Inquiry*

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Project: Statistical Inquiry

Problem

As a statistical analyst, you are required to:

a. design a statistical experiment that would generate **numerical data**
b. collect **numerical data** and make visual presentations of your findings
c. analyze your data
d. generalize and evaluate your statistical findings

For this project, you may collect your data individually or in groups of 2, 3, or 4, and complete your own written presentation within 5 periods (one week).

Resources

- Technologies to collect, calculate, and present data
- Data sources (publications, databases, Statistics Canada, surveys)
- Presentation instruments and materials (graph paper, poster board, photographs, tapes, etc.)

Project Guidelines

1. Design
(Periods 1 and 2)

- Identify a problem or question of interest whose answer is best determined through statistical experimentation and analysis of **numerical data**, and give reasons for your topic selection.
- Formulate a hypothesis or predict a general outcome of the investigation.
- Identify the population to be surveyed.
- Determine an appropriate method for selecting a representative sample.
- Evaluate the sampling method for bias:
  - Is the sample size adequate?
  - Is the survey question clear?
  - What errors are anticipated?

Note: Upon completion of the above tasks, fill out the "Statistics Project Approval Sheet," found at the back of the booklet, and have it checked and signed by your teacher.

Continued

Continued

2. Organization and Visual Presentation (Periods 2 and 3)

- Conduct your survey and neatly record your results on tally sheets (to be kept).
- Construct a visual representation of your data:
  i. Organize and display your data, using two or more of the formats studied:
     – stem-and-leaf plot
     – 50% box-and-whisker plot
     – histograms or other appropriate displays
  ii. Provide reasoning for the organization and presentation of your project.

3. Analysis (Periods 3 and 4)

- Analyze your data and visual presentations to determine the measures of central tendency and dispersion. The analysis should include:
  – mean, median, mode
  – range, lower and upper extremes, lower and upper quartiles, interquartile range, and outliers (whiskers)
- Draw and defend conclusions based upon the analysis of your data, including an inference about the general population.

4. Generalization and Evaluation (Periods 4 and 5)

- Defend or reject your hypothesis, with generalizations based upon your data and analysis.
- Evaluate your project and its findings (i.e., errors, biases, difficulties, suitability, confidence, etc.).
- Extend your findings to other populations, and make further recommendations for future investigations that could supplement your analysis of this topic.

What to include in your written presentation

1. Introduction

- Responses made as you carried out the tasks under the guidelines of "Design."

2. Organization and Visual Presentation

- Data charts, graphs, and visual presentations should be organized together (except tally sheets, which should be included at the end of your project).
- Reasons for selection of display formats.

3. Analysis

- Calculations and insights made under the task guideline "Analysis."

4. Conclusion

- Statements developed under the task guideline "Generalization and Evaluation."

Note: References actually consulted and found to be useful should be cited within the main text where used; e.g., an equation, a definition, data, computer programs.

Project Scoring Criteria

Your project will be marked and assessed out of a total of 30 marks, and based on the following five scoring categories and their scales.

Categories	Marks	Scoring Criteria
Design • question, population, sample, hypothesis, method of collection		*The student*
	6	• clearly identifies the problem and provides all steps and information necessary for conducting the project
	5	• clearly identifies the problem and provides all steps and information necessary for conducting the project, with a minor error
	4	• substantially identifies the problem and provides most steps and/or information necessary for conducting the project
	3	• reasonably identifies the problem, although some of the steps and information are flawed or missing
	2	• provides an unclear identification of the problem and the process; response may contain steps that are fragmented or missing
	1	• makes a significant start that shows some understanding of the process or information related to the problem
	0	• presents work that does not reflect any understanding of the statistical design process

Continued

Continued

Categories	Marks	Scoring Criteria
Organization and Visual Presentation • tally sheets, charts and/or graphs (at least two types)		*The student*
	6	• chooses correct formats to organize and represent data. The charts, diagrams, or graphs are presented clearly, with supporting reasons for their choice
	5	• chooses correct formats to organize and represent data. All required charts, diagrams, or graphs are presented, but there may be minor errors in presentation
	4	• chooses correct formats to organize and represent data. Most charts, diagrams, or graphs are presented clearly and correctly
	3	• chooses correct formats to organize and represent data. Some charts, diagrams, or graphs contain major errors or are missing
	2	• presents a few charts, diagrams, or graphs, some of which are flawed
	1	• makes a significant start in presenting charts, diagrams, or graphs related to the problem
	0	• attempts charts, diagrams, or graphs that are not relevant
Analysis • calculations/analysis of measures of central tendency and dispersion		*The student*
	6	• analyzes and interprets correctly, thoroughly, and insightfully, using appropriate statistical procedures, measures, and calculations
	5	• analyzes the data effectively, using appropriate statistical procedures and calculations, but the analysis may contain few minor errors
	4	• analyzes and interprets major portions of the project and data reasonably, but small parts of the analysis are missing or flawed
	3	• makes a reasonable attempt to analyze the data, but the analysis contains major errors or lacks significant parts
	2	• makes a significant attempt to analyze some part of the data
	1	• makes a weak attempt to start an analysis or calculation relevant to the analysis
	0	• shows no relevant attempt to analyze the data

Continued

Continued

Categories	Marks	Scoring Criteria
Generalization and Evaluation • conclusions, interpretations, and recommendations		*The student*
	6	• provides generalizations and interpretations that are insightful, complete, and correct
	5	• provides all required generalizations and interpretations, which are complete and correct
	4	• provides some required generalizations and interpretations that are complete and correct
	3	• provides some generalizations and interpretations that are weak but lead to a correct inference
	2	• attempts to make generalizations and interpretations that are appropriate but flawed
	1	• attempts to provide some generalization or interpretation
	0	• attempts no generalization or interpretation
Communication • appeal, organization, extension, consistency, communication		*The student*
	6	• provides detail, and communicates and presents the project effectively and clearly
	5	• provides detail, communicates and presents the project effectively, but the communication contains a minor flaw
	4	• communicates and presents the project well in general terms, but the communication lacks in specifics
	3	• communicates and presents the project in an understandable but limited fashion
	2	• provides visual and written communication that is lacking in organization and clarity or communication that is minimal
	1	• attempts to communicate, and presents some part of the project
	0	• provides communication that is missing or irrelevant

Statistics Project Approval Sheet

Please fill out this sheet carefully and get a signature from your teacher **before** you continue this project.

Names of Group Members:
1. Describe the problem.
2. State what you anticipate the outcome of this investigation will be (hypothesis).
3. Identify the population to be sampled and describe the sampling technique, and determine the sample size.
4. Indicate the question that you are going to ask.
5. Give the details of the survey that you will conduct.
6. List all the potential sources of bias that could affect your survey's accuracy.

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